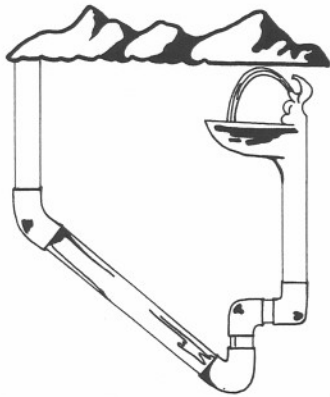


Water Lines



Water Lines is the resource newsletter and calendar of the Nevada Drinking Water and Wastewater Training Coalition.

Volume 9 Spring 2002 issue

Inside this issue....

Spigot Q&A	2
Call before you dig	2
State, EPA sponsor help for wastewater systems	3
Chlorine's effect on corrosion in drinking water systems	4
New wave of Nevada operators successful in December water certification exams	5
Resource Round-up	6
Training Calendar 2002	7

Water Lines is funded by Rural Community Assistance Corporation through a contract with the Nevada State Health Division.

Editor,
Abigail Johnson, RCAC
Editor and Production,
Julia Helmreich, RCAC

Featured System: Golconda General Improvement District

By Philip Walsack, Rural Community Assistance Corporation

Golconda General Improvement District (GGID) serves 90 residential and one commercial account in central Humboldt County. Golconda is about 13 miles east of Winnemucca on Highway 80 on the southern banks of the Humboldt River.

The Golconda hot springs were a traveler's landmark in the late 1800s. When the Gold Run mining district was formed in 1866, the Central Pacific railroad laid tracks through Golconda. The town of Golconda became an important freight and telegraph station. Transcontinental train passengers used the hot springs to ease the aches of the bumpy ride west.

The town was platted in the 1890s by Scottish interests who organized the Adelaide Star Mines. The company planned to mine the copper in the Adelaide Mine and other newly acquired mines in the Gold Run District. The town's slogan promised, "What Anaconda has been for Montana, Golconda promises to be for Nevada."

Today, Golconda is a rural alternative to city life in Winnemucca and is a short commute for employees who work in the mines of northern Humboldt County.

The community has two sources of

water supply—one groundwater well and a spring. The groundwater well is a mile south of the community. The well was drilled in 1995, is 400 feet deep and features 6-inch casing with a 7.5 HP Goulds submersible pump. It can produce 85 gallons per minute (gpm) with a drawdown of 165 feet over a 12-hour period. The well is controlled by telemetry located at the storage tank. It is also used as the

(Continued on page 3)

★
Featured
System

Wanted: Northern water operator for advisory board

Attention Northern Nevada water operators: March 25 is the deadline to fax letters of interest to the Nevada State Health Division to apply for the advisory board to the State Board of Health for certification of operators of public water systems.

The seven-member board represents all areas of the state. It advises the State Health Division and the State Board of Health on certification matters. Meetings are held each calendar quarter, alternating between northern and southern Nevada.

Members of the Advisory Board serve without compensation. While on board business and during travel to and from the meetings, members receive the state per diem allowance

(Continued on page 3)

Training Coalition seeks input at NvRWA Conference

Operators, managers and board members encouraged to attend

The members of the Nevada Drinking Water and Wastewater Training Coalition invite all interested individuals, organizations, groups and agencies to attend the next board meeting March 28 at 1:30 p.m. at the Nevada Rural Water Conference in Sparks. The meeting is open to anyone, and there will be an opportunity to talk about your training needs. ♠

The Spigot



Q & A

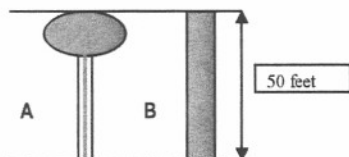
Calculating pressure and head

Q 1. Looking at the two reservoirs in the graphic below, will the pressure at the bottom be:

- The same
- Greater in tank A
- Greater in tank B

A 1. Pressure is directly related to the height of a column of fluid. The height is called head or feet of head. For every foot of head, there is a pressure of 0.433 pounds per square inch. The pressure at the bottom of a container is only affected by the height of water in the container and not by the shape of the container. Therefore **a.** is the correct answer.

Source: ACR Publications Inc., *Introduction to Small Water Systems*, 1999



Q 2. Convert 40 psi to feet of head.

A 2. Use the conversion factor
1 foot of head = 0.433 psi

$$40 \text{ psi} \times \frac{1 \text{ ft}}{0.433 \text{ psi}} = ? \text{ feet}$$

Cancel the "psi" units on the top and bottom of the equation, leaving the desired unit "feet." Then perform the calculation:

$$40 \cancel{\text{ psi}} \times \frac{1 \text{ ft}}{0.433 \cancel{\text{ psi}}} = 92.38 \text{ feet}$$

So, 40 psi = 92.38 feet of head.

Q 3. Convert 60 feet to psi.

A 3. Use the conversion factor
1 foot of head = 0.433 psi

$$60 \text{ ft} \times \frac{0.433 \text{ psi}}{1 \text{ ft}} = ? \text{ psi}$$

Notice that we use the same conversion factor, but it is inverted to yield the desired units. Cancel the "ft" units on the top and bottom of the equation leaving the desired unit "psi."

Then perform the calculation:

$$60 \cancel{\text{ ft}} \times \frac{0.433 \text{ psi}}{1 \cancel{\text{ ft}}} = 25.98 \text{ psi}$$

Therefore, 60 ft of head = 25.98 psi.

Editor's Note:

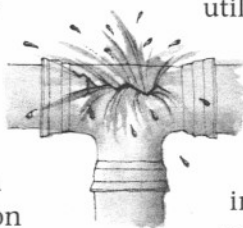
The Spigot feature now combines Q&A on a variety of topics with typical certification exam questions. The Spigot is prepared by Crystel Montecinos, the Program Development Specialist, of the UNR Cooperative Extension.

Call before you dig . . .

One-Call Notification—Mark underground water lines and make one call before an excavator goes to work

By Galen Denio, Nevada State Health Division

Chapter 455 of the Nevada Revised Statutes requires excavators to notify underground utility owners about upcoming work in advance. This gives utilities time to mark underground facilities in the excavation area. This damage-prevention service can save you time, work and money. However, the law also requires that all underground-facility operators (except the Department of Transportation) belong to a "one-call" notification center. Excavators



can then make just one call to get the necessary information to any utilities that might be affected.

Despite this legal requirement many utilities that own or operate underground utilities—including water companies—are not subscribers to the one-call system in Nevada. Damage to underground facilities can be costly and dangerous—particularly when a water main is damaged. The risk of contamination is serious.

The cost to join the one-call system is much less than the potential for lost revenue and repair costs, to say nothing of the impact on your customers.

To learn more about the Nevada law and ongoing damage prevention efforts, to become a member of a notification center, or to obtain free printed materials, call 1-925-798-9504. Find the law on the web at www.leg.state.nv.us/NRS/NRS-455.html (NRS 455.082 to 455.180, inclusive).

Golconda GID

(Continued from page 1)

secondary water source and assists the community to meet peak summer demands.

The Pole Creek Spring was rehabilitated in 1994 to improve its flow. Two six-inch perforated collectors were installed and buried in leach rock. The leach rock was covered with plastic and topped with native soil. A pre-cast concrete manhole is used as the collection box. The spring is only 60 feet away from the creek, but has water chemistry almost identical to the groundwater well quality two miles away. In 1994, the State Bureau of Health determined Pole Creek Spring was not under the influence of surface water. The spring produces more than 80 gpm throughout the year.

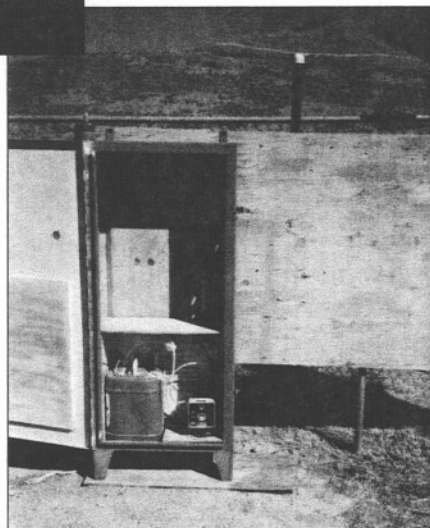
The 150,000-gallon water storage tank is on a small hill west of town and provides customers a baseline pressure of approximately 50 psi.

The distribution system is made up of eight-inch to four-inch PVC and metal piping. In the future, the community may loop several of its dead-end lines and upsize the remainder of its four-inch distribution piping.

Operator Andy Latham passed his Grade 1 Water Distribution Operator examination last year. Latham has lived in the community for 14 years and works locally in the mining industry. Latham installed a tablet-style chlorine disinfection system at the spring site. A tube full of chlorine tablets is stored in the manhole. The first tablet is dissolved by the flowing spring water until another tablet is needed and slides down the tube into the water flow.

Water in Golconda costs \$20 per month with 20,000 gallons includ-

ed in this base rate for residential customers. For usage between 20,000 to 30,000 gallons, a \$1.50 per 1,000-gallon charge is levied. Usage over 30,000 gallons is charged \$2 per 1,000 gallons used. Commercial customers pay \$30 per month with 30,000 gallons included in their base rate. For usage between 30,000 and 40,000 gallons, a \$1.50 per 1,000-gallon charge is levied. Usage over 40,000 gallons is charged \$2 per 1,000 gallons used.



System operator Andy Latham (above left) maintains the well's chlorine disinfection system (above) at the Golconda GID.

GGID's Treasurer, Becky Trigg, calculates customer bills. The county deposits GGID's payments into the enterprise fund, and GGID pays its bills using a voucher system with the county. The GGID is debt free. ♻️

State, EPA sponsor help for wastewater systems

By Joe Maez, Nevada Division of Environmental Protection

Nevada's Circuit Rider Program has provided on-site technical assistance to wastewater treatment facilities of rural communities and Native American communities for more than 16 years. The U.S. Environmental Protection Agency and the State of Nevada fund this program jointly.

Trainer Kirk Peterson, of SPB Utility Services, travels across the state, assisting rural and Native American communities on infrastructure, operational and regulatory issues. Recently, he helped the Town of Tonopah optimize its Imhoff Tanks and helped the City of Yerington save significant electrical costs for pond aerator operation. Future assistance is planned for Hawthorne, Ely and Beatty.

In addition to on-site assistance, the Circuit Rider program offers training for treatment plant operators. In January, 25 state operators and engineers attended a two-day class on sequential batch reactors held in Reno. The Nevada Water Environment Association provided meals and supplies as a sponsor.

Questions? Contact Joe Maez at the Nevada Division of Environmental Protection at 775/687-4670 or go to www.state.nv.us/ndep. ♻️

Advisory Board seeks operator

(Continued from page 1)

and travel expenses to the extent that money is available.

To apply, by March 25 fax a letter of interest describing your background and why you would like to serve on the board to Steve Brockway, Nevada State Health Division, at 775/687-5699.

Candidates should attend the board meeting on March 28 in Sparks during the NvRWA Conference. *(See calendar pg. 7)*

Questions? Contact Steve Brockway at 775/687-6615, extension 235. ♻️

Chlorine's effect on corrosion in drinking water systems

By Michelle Moore, National Drinking Water Clearinghouse Promotions Writer/Editor
reprinted with permission from On Tap, Summer 2001 issue

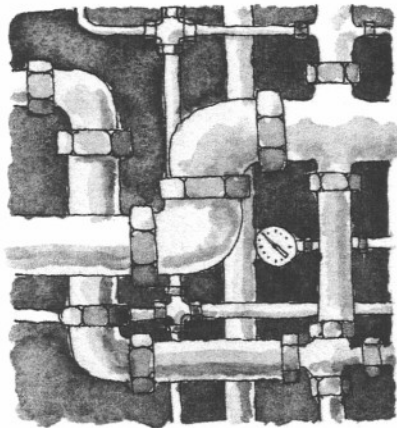
Small drinking water treatment systems face a dilemma: Two regulations from the U.S. Environmental Protection Agency (EPA), the Lead and Copper Rule and the Ground Water Rule, seem to work against each other, even though each rule is meant to benefit the public.

The Lead and Copper Rule, which EPA implemented in 1991, mandated that water treatment systems sample their treated water for lead and copper. Internal pipe corrosion can lead to both aesthetic problems (staining fixtures and laundry) and consumer health issues.

The Ground Water Rule, that EPA has scheduled to be implemented in the fall of 2001, requires that water systems be reevaluated for disinfection needs. Operators must monitor systems for microbiological contamination. These systems must then remove or inactivate micro-organisms to prevent them from reaching consumers. Because many smaller water systems rely on groundwater, this rule will affect them the most.

The most common disinfection method is to add chlorine, a corrosive agent, to water. Concerns arise because disinfecting to comply with the Ground Water Rule may push water systems out of compliance with the Lead and Copper Rule. Further, adding chlorine to the finished water may make other metals in a system more likely to corrode.

A team of researchers in Wisconsin sponsored by the Midwest Technical Assistance Center (MTAC) studied chlorine's effect on corrosion in drinking water systems. Their research found that introducing free chlorine for disinfection increases



Operators must monitor systems for microbiological contamination. These systems must then remove or inactivate micro-organisms to prevent them from reaching consumers.

corrosion. Adding free chlorine appears to affect iron the most. Chlorine also appears to have an effect on copper and lead, but it may or may not increase corrosion with these metals.

Researchers suggest corrosion control measures

A pH below 7.0 creates highly corrosive water. However, a pH above approximately 7.8 to 8.0 greatly diminishes chlorine's disinfectant efficacy. Water with a high pH value may also cause calcium carbonate flaking in the piping system, which in turn can cause flow problems.

If one or more metals in the drinking water system continue to show increased corrosion levels, or if raising the pH is not practical, operators can add orthophosphate (a corrosion control agent*) to the chlorinated water. But, before adding orthophosphate, the pH of the water should be at a minimum of 7.0.

The operator must be aware that adding phosphate to drinking water may cause conflicts with phospho-

(Continued on page 5)

Corrosion evaluation sampling

Paying attention to the following details will help you achieve accurate corrosion evaluation sampling:

- select buildings both close to the utility and at the extreme ends of the distribution system;
- verify piping materials in the buildings selected for sampling;
- be sure that sample water has not been softened or treated;
- verify that no water flowed through the building's plumbing system for the prescribed stagnation time of a first-draw sample;
- be consistent in the stagnation time of each sample;
- after obtaining the first-draw sample for metals, gather other information, such as the temperature and pH of the stagnant water, the temperature and pH of the flowing water, plus the orthophosphate concentration (if using any phosphate product), the total phosphate concentration (if using a polyphosphate product), and the chlorine residual of the flowing water; and
- plot all information on graphs versus time. Note changes to corrosion control treatments or other system changes on the graphs.

Chlorine's effect

(Continued from page 4)

rus discharge limits at the municipal wastewater treatment plant and with allowable phosphorus runoff levels into nearby lakes and streams. Operators also need to be aware that adding orthophosphate may increase copper corrosion in the system. The increase can be tolerated if copper levels do not rise above 1,300 micrograms per liter in homes.

Proper monitoring is essential to adequate corrosion control. An established, effective monitoring method employs pipe loops of each metal in question. Pipes constructed of various metals can be connected at one or more locations in a water distribution system.

Routine samples taken from the pipe loops will show corrosive trends in the system and chemicals can be adjusted accordingly. This method's advantages are that samples can be taken under more controlled condi-

tions than in private residences. Also, the operator does not have to depend upon the good will of consumers to obtain samples. The disadvantage of this system is that a small water utility may not have the resources and personnel to attend to the pipe loops.

Until new, effective, and economical corrosion monitoring techniques are developed, water utility operators who do not use pipe loops for monitoring should evaluate for corrosion of water distribution system metals by obtaining samples from buildings in their distribution system beyond those samples required by the Lead and Copper Rule. The Lead and Copper Rule sampling is weighted toward older buildings with lead service lines or lead solder in the plumbing system.

Operators should select and sample newer homes with copper plumbing systems in the same manner for evaluating copper corrosion. Other materials of concern in plumbing systems, such as iron, should be sampled by proper selection of buildings or residences and by obtaining these extra samples.

Reference

The Effect of Chlorine on Corrosion in Drinking Water Systems Study by Abigail F. Cantor, P.E., Jae K. Park, Ph.D., and Prasit Vaiyavatjamai, November 2000, was funded by the Midwest Technology Assistance Center (MTAC). Copies of the final report are available from MTAC by calling 217/333-9321.

**Corrosion control techniques include lime softening and the addition of sodium silicates. To learn more about these and other corrosion control methods in NDWC's Tech Brief #3, call 800/293-4191.* ♠



New wave of Nevada operators successful in December water certification exams

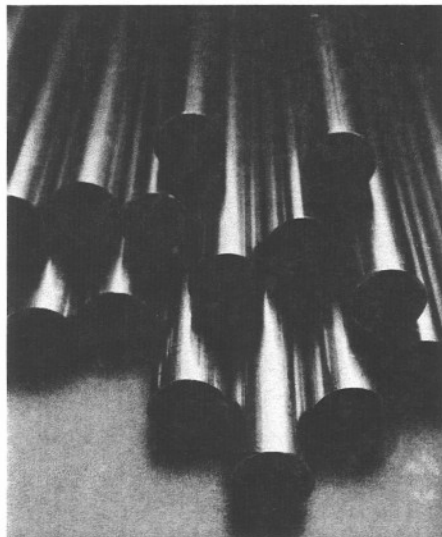
The following operators passed entry level water certification exams in December 2001 for distribution grades 1 & 2 and treatment grades 1 & 2. Congratulations to all!

Distribution grades 1 & 2

Louis J. Aceves, D-2; Campbell P. Anderson, D-1; George Barnette, D-1; Jim Bentley, D-1; Kathrine Bernard, D-1; Carey J. Billante, D-2; Miguel Chavarria, D-2; Cody D. Dennett, D-1; Michael J. Duke, D-2; Jacqueline B. Edwards, D-2; Peter J. Foust, D-1; Alfred E. Gardner, D-1; Dennis L. Grafton, D-1; Steven C. Hansen, D-1; Robert B. Hougham, D-1; Michael Jackson, D-1; Louis Johnson, D-1; Robert L. Jones, D-1; Tom Lamb, D-1; Robert B. Loding, D-2; Mark R. Madsen, D-2; Michael A. McAllister, D-1; Timothy Lee Millis, D-1; Fred Minchin, D-1; Cindy Moore, D-1; Floyd R. Mundt, D-2; David W. Musselman, D-1; Mark Patterson, D-1; Phyllis Radack, D-1; William D. Schnuckel, D-1; Keith H. Shoemaker, D-1; Charles Smith, D-1; Stanley S. Snyder, D-1; Charles L. Stewart, Jr., D-1; Todd H. Welty, D-1.

Treatment grades 1 & 2

Jeffrey S. Blue, T-1; William F. Cowden, T-1; Alan Draper, T-1; Scott M. Fleckenstein, T-1; Russell Harms, T-1; Ralph E. Hubner, Jr., T-1; Gary Hutchinson, T-1; Anthony; Sean Mayor, T-2; Frank J. Rauscher, T-1. ♠



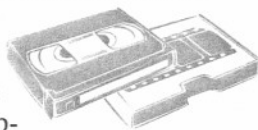
The Lead and Copper Rule, which EPA implemented in 1991, mandated that water treatment systems sample their treated water for lead and copper. Internal pipe corrosion can lead to both aesthetic problems (staining fixtures and laundry) and consumer health issues.

RESOURCE ROUND-UP

Math Training Video & Workbook Available

Thanks to the efforts of the Nevada Training Coalition, a math and chlorination training video and workbook are now available. These training materials span several grade levels

and can be applied to both treatment and distribution operators. The Bureau of Health Protection Services has copies of the video available to check out, and technical assistance providers will have a copy of the video to use for one-on-one tutoring. Contact Adele Basham at 775/687-6615 ext. 265 to request the video.



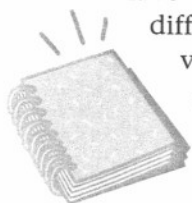
Water system protection resources are on the web

Because preparedness is vital to combating terrorist threats to public infrastructure, the National Drinking Water Clearinghouse (NDWC) has assembled a collection of articles, checklists, phone numbers and web sites about protecting small water systems. Find the collection at the NDWC web site at www.ndwc.wvu.edu or call 800/624-8301 to request the information.



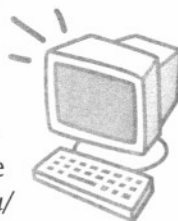
Reading help offered

As a manager of a utility, you may have employees who have difficulty reading. The Nevada Literacy Coalition can refer you to services and tutors in your area who can help. For more information, call the Nevada Literacy Coalition at 775/684-3340 or 800/992-2880.



Search wastewater databases online

The National Small Flows Clearinghouse (NSFC) maintains six databases that provide information about all aspects of sewage treatment. The Bibliographic and Manufacturers and the Consultants Databases are available online at www.nesc.wvu.edu/nsfc/nsfc_databases.htm.



The Bibliographic Database stores thousands of articles dealing with onsite and small community wastewater collection, treatment, disposal and related topics. The articles are collected from more than 90 journals and magazines, as well as conference proceedings, U.S. EPA documents and research papers.

Customers can search for a particular technology and receive the latest literature on the subject. For example, a homeowner with questions about a clogged drainfield can obtain articles about successful techniques as well as methods that have failed.



The Manufacturers and Consultants Database houses a list of industry contacts for wastewater products and consulting services. This database serves both as a reference for engineers, private citizens and small community officials, and a referral database for wastewater products and trade items.

Currently, the database contains more than 1,200 entries. Customers can search for a specific type of manufacturer or consultant, and searches can be conducted based

upon one or more product or service categories. For instance, a homeowner interested in purchasing a composting toilet can obtain a list of manufacturers.

Other NSFC databases include information about:

- approximately 1,000 facilities using conventional, innovative and alternative wastewater treatment technologies;
- regulations for onsite wastewater systems in 48 states;
- contacts and referrals (a list of organizations involved in onsite and small community wastewater infrastructure at the national, state and local levels); and
- health departments and other local or regional agencies that serve as the local permitting and inspection authority for onsite systems in all states.

Presently, these databases are not online. However, you may call the NSFC at the numbers below to request a search. An NSFC technical assistant will discuss the results with you. For information, visit www.nsfc.wvu.edu; or call 800/ 624-8301 or 304/293-4191.

ACR offers Nevada training

Arasmith Consulting's (ACR) web site shows training that will be offered in Nevada through ACR's contract with the Nevada State Health Division. It includes training for provisional operators, train the trainers and other ACR Nevada training opportunities. See the training schedule at www.nvwatertraining.com.



Training Calendar 2002

March 14 — North Las Vegas and Reno — AWWA Satellite Teleconference on the Basics of Waterborne Pathogens, 9 a.m. - 12:30 pm PST. North Las Vegas at CCSN Cheyenne Campus, CIE, Room 1100; Reno UNR Dept of Civil Engineering Room 2008. Info: Stephanie Mendoza 909/481-7200.

March 20-22 — Reno — Nevada Water Environment Association Annual Meeting. Info: Eric Leveque, 702/792-3711.

March 25 — Deadline to submit letter of interest to serve as Northern Nevada operator representative on the Nevada Operator Certification Board, see related article, page 1.

☼ March 26-28 — Sparks — Nevada Rural Water Association Technical Conference at John Ascuaga's Nugget. Info: 775/884-2055.

March 28 — Sparks — Nevada Water Operator Certification Board Meeting, 9 a.m. to noon, at John Ascuaga's Nugget, in conjunction with Nevada Rural Water Association conference. Info: Steve Brockway 775/687-6615 ext. 235.

March 28 — Sparks — Nevada Training Coalition Board Meeting, 1:30 p.m. - 4 p.m., Tahoe Room, John Ascuaga's Nugget, in conjunction with Nevada Rural Water Association conference. The Coalition board invites operators to give opinions on training needs. Info: Adele Basham 775/687-6615 ext. 265.

March 28 — Sparks — Flagger Certification Course at John Ascuaga's Nugget in conjunction with NvRWA conference. Course meets basic requirements of the Manual on Uniform Traffic Control Devices. Call for other dates and locations. Info: 775/784-4414.

April 2-5 — San Jose, CA — AWWA CA-NV Section Conference, *Technology: The Future of Water*. Info: 909/481-7200.

April 5 — NDEP Wellhead protection program deadline to submit proposals. Info: Nevan Kane 775/687-4670 ext. 3104.

April 16-17 — Pahrump — ACR/RCAC provisional operator certification training. Info: 775/882-8887.

April 16-19 — Reno — ACR/RCAC introduction to small water systems training. Info: 775/882-8887.

May 21-23 — TBA — ACR/RCAC pumps and pumping training. Info: 775/882-8887.

May 12 - 19 — National Drinking Water Week

June 16-20 — New Orleans, LA — AWWA Annual conference and exposition. Information and registration: www.awwa.org/ace2002.

Oct. 14-17 — Reno — AWWA CA-NV Section Fall Conference, including Small Systems Day. Info: 909/481-7200.

State of Nevada water certification exams

All exams will be proctored some time during the week of the date listed. Examinees will be contacted by a proctor to schedule testing. Water operator certification tests are scheduled in 2002 for the weeks of: March 11, March 29 — (*special sitting for NvRWA*), June 3, Sept. 9 and Dec. 2. Info: Debra Kaye, 775/834-8100.

Wastewater certification exams

Wastewater certification exams will be given the March 29 at the NvRWA conference and the second Thursday in July and October in Reno, Las Vegas and Ely. Info: 702/433-1498.

Community College of Southern Nevada Wastewater and Water Technology Program

Info: LeAnna Risso, 702/434-6600 ext. 6418.

☼ WWET training in Clark County

Info: Gladys Alford, 702/258-3834; see www.wwet.org for a current training calendar.

UNR — Colleges of Agriculture, Biotechnology, and Natural Resources and Cooperative Extension

Videoconference Training Calendar 2002

March 15, April 25, May 31, June 27, August 9, September 12, October 18, November 29 — Reno and Rural Locations — UNR videoconference classes on water systems operation, maintenance and management. For information, locations, topics or to be added to the mailing list: contact Crystel Montecinos at 775/784-6853.

☼ This symbol designates training pre-approved by the Nevada State Health Division for continuing education units (CEU) credit. Other training may be eligible for CEUs but is not yet pre-approved. Before attending any training, contact the Health Division at 775/687-6615 ext. 235 for approval. Ten hours of approved training equals 1 CEU. A different ratio applies for safety training. Contact Steve Brockway 775/687-6615 ext. 235 for details.

Nevada Drinking Water and Wastewater Training Coalition

**American Water Works Association
California/Nevada Section**
www.ca-nv-awwa.org
Glenn Reynolds, Smaller Utilities
Committee Chair, 510/790-1602
Nicole Schreuder, training, 909/291-2103

Indian Health Service
Dominic Wolf, 775/784-5327

Nevada Division of
Environmental Protection
www.state.nv.us/ndep/index.htm
Leo Drozdoff — Water Pollution Control
775/687-4670, ext. 3142
Nevan Kane — Wellhead Protection
775/687-4670, ext. 3104
Tom Whalen, — AB 198 Water Grant
Program, 775/687-4670, ext. 3111

Nevada Rural Water Association
www.nvrwa.org
Georgia Greenrod, 775/884-2055

Nevada State Health Division
www.state.nv.us/health/bhps
775/687-6615
Adele Basham, DWSRF, ext. 265
Steve Brockway (CEU approval), ext. 235
Patty Lechler, ext. 238
Dana Pennington, ext. 237

Nevada Water Environment Association
www.wef.org
Bruce Johnson, 702/369-6175
Starlin Jones, 775/861-4104
Rick Warner, 775/954-4621

Public Utilities Commission of Nevada
www.state.nv.us/puc
Steve McGoff, Utility Engineer, 775/687-6040

Rural Community Assistance Corporation
www.rcac.org
John Dailey, 775/682-8887
Micheline Fairbank, 775/882-8887
Abby Johnson, 775/882-0296
Philip Walsack, 775/882-8887

U.S. Environmental Protection Agency,
Region 9
www.epa.gov/region09
Marvin Young, 415/744-1847

USDA-Rural Development
www.usda.gov/rus/water/index.htm
Mike Holm, 775/887-1222
Kay Vematter, 702/262-9047 ext. 113

University of Nevada, Reno
Dept. of Civil Engineering
Dean Adams, 775/784-1474
Environmental & Resource Sciences
and Nevada Cooperative Extension
www.nce.unr.edu/swp
Mark Walker, 775/784-1938

**Water/Wastewater Education and Training
Consortium of Southern Nevada — WWET**
Marie Pollack, Chair, 702/298-3113
Gladys Alford, Registrar, 702/258-3834

NDWWTC Board Members

Adele Basham
775/687-6615 ext. 265
abasham@bhps.state.nv.us

Dean Adams
775/784-1474
vdadams@unr.nevada.edu

Georgia Greenrod
775/884-2055
nvrwa@pyramid.net

Russell Rocha
775/861-4105
rrocha@ci.sparks.nv.us

Philip Walsack
775/882-8887
pwalsack@rcac.org

Articles in Water Lines may be reprinted with permission from RCAC. Please note that the article originally appeared in Water Lines, the newsletter of the Nevada Drinking Water and Wastewater Training Coalition. For permission, call 916/447-9832 extension 108.



Rural Community Assistance Corporation
3120 Freeboard Drive, Suite 201
West Sacramento, CA 95691

Return Service Requested

Nonprofit Org.
U.S. Postage
PAID
Permit No. 2418
Sacramento, CA

Nevada Drinking Water and Wastewater Training Coalition

Water Lines

Spring 2002



This issue of *Water Lines* is printed on recycled and recyclable paper.